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भारतीय मानक

बल्क प्रहस्तन उपस्कर–स्टैकर (रेल आरोपित)

भाग 3 निर्माता/पूर्तिकर्त्ता द्वारा देय आँकड़ा पत्र

Indian Standard

BULK HANDLING EQUIPMENT—STACKER (RAIL MOUNTED)

PART 3 DATA TO BE FURNISHED BY THE MANUFACTURER/SUPPLIER

ICS 53.040.01

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 2003

Price Group 2

Bulk Handling Systems and Equipment Sectional Committee, ME 07

FOREWORD

This Indian Standard (Part 3) was adopted by the Bureau of Indian Standards, after the draft finalized by the Bulk Handling Systems and Equipment Sectional Committee had been approved by the Mechanical Engineering Division Council.

In industries such as steel, thermal power, cement, etc, uniform quality of the raw material plays an important role in the quality of the product and also for the optimum operation of the plant. The raw material is therefore first stacked, blended and then reclaimed for feeding to the plant for further processing. Stacking is done by stackers and various types of stackers are used for this purpose.

A stacker consists of a system of belt conveyors and extended stacker boom through which material is stacked in the form of heap. The pile of the material may consist of the same material but in different size or may consist of different material depending upon requirements. The stacked material is then reclaimed by the reclaimer and loaded onto the conveyor system for feeding to the plant.

This standard is published in three parts. The other parts of this standard are:

Part 1 General requirements

Part 2 Data to be furnished by the purchaser

The formulation of this standard is with a view to provide guidelines for adoption of uniform approach by the purchaser and the manufacturer/supplier.

Indian Standard

BULK HANDLING EQUIPMENT—STACKER (RAIL MOUNTED)

PART 3 DATA TO BE FURNISHED BY THE MANUFACTURER/SUPPLIER

1 SCOPE

This standard (Part 3) covers general requirements of various types of rail mounted mobile stackers used as bulk handling equipment. This standard does not cover the rail mounted combined stacker-cum-reclaimer.

2 TECHNICAL PARTICULARS TO BE FURNISHED BY THE MANUFACTURER/SUPPLIER

2.1 Main Features

a) Type of stacker, and
b) Make.

2.2 Guaranteed Stacking Capacity (t/h)

a) Rated capacity, and
b) Designed capacity.

2.3 Wind Velocity (km/h)

a) Operating,
b) Non-operating, and
c) Strom.

2.4 Maximum Wheel Load without Impact Factor Across the Rails (t)

a) *Vertical*
  1) Operating,
  2) Non-operating
b) *Horizontal* (*in both directions*)
  1) Operating, and
  2) Non-operating.

2.5 Type and Capacity of Stock Pile (t)

a) Total number of stock pile, and
b) Capacity (tonnes) of each stock pile.

2.6 Dimensions of Stock Pile

a) Width of stock pile at base (m),
b) Length of stock pile at base (m), and
c) Height of stock pile from base (m).

2.7 Long Travel Rail Details

a) Type,
b) Size,
c) Track gauge (m),
d) Type of foundation provided (sleeper/continuous footing), and
e) Drainage arrangement considered.

2.8 Length of Runway (m)

2.9 Effective Length of Travel (m)

2.10 Effective Length of Stock Pile (m)

2.11 Track Data Variations

a) Vertical distance from one rail to another (across rails),
b) Vertical along rail of each rail on each rail (mm),
c) Horizontal on rail gauge/centres (mm), and
d) Misalignment of the machine buffers along the rails.

2.12 Boom Conveyor

a) Length (m),
b) Belt width and trough angle,
c) Belt speed,
d) Range and speed of luffing,
e) Slewing angle of boom,
f) Range of speed,
g) Distance between top of rail to bottom of pile,
h) Take up details:
  1) Type,
  2) Travel,
  3) Location,
j) Conveyor belt specification,
k) Type of idlers:
  1) Re-greasable/life sealed
  2) Electrically resistance seamless welded or cold resistance pipe (ERWCDS),
  3) Drop-in type/bolted,
  4) In-line/staggered,
  5) Outer diameter,
  6) Number of rolls,
  7) Spacing,
m) Type of pulleys and lagging details,

n) Walkways
   1) To be provided — One side/both sides, and
   2) Minimum width(s) (mm).

2.13 Super Structure

a) Type of construction,
b) Material of construction,
c) Code followed for design and construction, and
d) Painting procedure.

2.14 Hopper and Chute

a) Material and thickness of plates,
b) Malt and thickness of liner plates,
c) Expected wear life of chute/hopper liners,
d) Gate at hopper/chute outlets:
   1) Type, and
   2) Mode of operation.

2.15 Details of Suspension Arrangements

2.16 Boom Luffing Arrangement

a) Number of hydraulic cylinders (one or two),
b) Type of luffing,
c) Number of winch drum,
d) Number of rope sheaves,
e) Type of rope tension equalization,
f) Type of drive arrangement, and
g) Type of rope as per Indian Standard.

2.17 Long Travel Mechanism

a) Diameter of travel wheels (mm),
b) Total number of wheels,
c) Number of driven wheels,
d) Number of non-driven (idle) wheels,
e) Wheel base (mm),
f) Material and type of wheels,
g) Number of bogies,
h) Travel speeds (m/min):
   1) Maximum,
   2) Minimum,
j) Details of bearing for wheel,
k) Brakes:
   1) Type,
   2) Rating,
   3) Supply voltage,
m) Lubrication,
n) Type of speed control,
p) Type of drive gear,
q) Type of support - 3 leg/4 leg support, and
r) Type of equalizing arrangements.

2.18 Boom Conveyor Drive Arrangement

a) Type of drive arrangement,
b) Location of drive,
c) Lubrication method, and
d) Maintenance platform, if required.

2.19 Boom Slewing

a) Type of drive arrangement,
b) Location of drive,
c) Diameter of slew bearing (mm),
d) Diameter of slew gear rim (mm),
e) Diameter of pinion (mm),
f) Type of slew bearing,
g) Type of slew gear rim — internal/external,
h) Slewing speed (m/min),
j) Number of drives, and
k) Type of control.

2.20 Operators' Cabin

a) Type of operator's cabin,
b) Location of operator's cabin,
c) Ventilation system, and
d) Moving or fixed type (motor control centre).

2.21 Motor Control Centre Room (MCC)

a) Type of motor control room,
b) Location of motor control room, and
c) Ventilation or air-conditioning system press wised.

2.22 Cable Reeling Drum (CRD)

a) Type of power cable reeling drum(PCRD),
b) Type of control cable reeling drum (CCRD),
c) Locations of PCRD and CCRD, and
d) Protective switch devices to prevent cable snapping provided — Yes/No.

2.23 Rail Clamps

a) Type of rail clamps,
b) Number of rail clamps, and
c) Clamping force (N).

2.24 Anemometer Location

2.25 Scrapper Details

a) Belt scrapper, and
b) Rail scrapper.

2.26 Tripper Details

a) Belt width in mm,

b) Belt speed in m/s, and

c) Troughing angle of idler.

2.27 Belt Weigher Details

a) Type,

b) Accuracy of maximum and minimum flow rate, and

c) Inclination.

2.28 Yard Conveyor Details

a) Belt width and trough angle,

b) Belt speed in m/s, and

c) Rated/maximum capacity.

3 MODE OF OPERATION

a) Manual mode,

b) Auto mode, and

c) Semi-auto mode.

4 PATTERN OF STOCK PILE BUILDING

a) Chevron pattern,

b) Windrow pattern, and

c) Stock pile formation details, namely trapezoidal, long conical or conical.

5 OTHER FEATURES

a) Type and number of rail sweepers,

b) Power supply voltage and frequency required/ available at site,

c) Low tension transformer:

    1) Type,
    2) Ratio,
    3) Rating,

d) Low tension switch gear:

    1) Type,
    2) Rating,

e) Details of power logical control (PLC) (if any),

f) Details of dust suppression arrangements provided (if any),

g) Service and duty conditions of the machine,

h) Lighting arrangements and type of lights in the stacking area, and

j) Type of communication system.

6 CHECK LIST

6.1 Rail Track Alignment

a) Rail centres and its tolerances, and

b) Rail levels shall be ensured to the tolerance recommended.

6.2 Boom Conveyor

6.3 Boom Luffing Assembly

6.3.1 *For Rope Luffing System*

a) Winch drum shall be aligned,

b) Rope reeving arrangement shall be adjusted and aligned,

c) Rope tension equalizer unit shall be adjusted,

d) Drive components, namely motor, gear reducer, coupling brake, etc, shall be properly connected and aligned, and

e) Safety switches shall be adjusted.

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